REMARKS

Claims 1-13 were pending and considered by the Examiner. Claims 1-13 were rejected. In response, claims 1, 8, 9, 10, 11 and 13 have been amended. Claims 1-13 remain pending. Reconsideration and allowance of claims 1-13 are respectfully requested.

In response to the rejection of claims 1-13 under 35 U.S.C. §112, 2nd paragraph, claims 1, 8, 9, 10, 11 and 13 have been amended, taking into consideration the comments made by the Examiner. Specifically, claims 1, 8 and 10 have been amended to recite that the bypass valve operatively couples at least one said motor "to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet". Claims 9 and 13 have been amended to recite the motors connected in parallel "with said pressure source". In claim 11, the word "directly" has been deleted.

It is believed that the amendments to claims 1, 8, 9, 10, 11 and 13 clarify the recitations identified by the Examiner. Therefore, it is respectfully submitted that claims 1-13 now particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Accordingly, it is respectfully submitted that claims 1-13 are allowable, and reconsideration and an indication of allowance are respectfully requested.

Claims 9 and 13 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claim 8 of co-pending application 09/870,921. Since this is a provisional obviousness-type double patenting rejection, and no claims have yet been allowed in either application, it is believed that no response is required at the present time.

Claims 1-10 and 13 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 3,021,802 (Glas). The Examiner specifically refers to Fig. 9 and "motors" 205 and 205' therein. It is respectfully submitted that the invention recited in independent claims 1, 8, 9

and 13 is patentably different from the teachings of Glas, and includes advantages over the prior art.

Fig. 9 of Glas, which the Examiner has specifically referred to, is described from column 6, line 52 through column 7, line 16. The structure includes a cylinder block 201, a working ram 205, a setoff piston 206 and a dividing wall 202 separating chambers 203 and 204. Covers 207 and 209 cover chamber 203 and 204. A valve member 213 is operated by a ram 214. Connection bores 249, 216 and 252, and conduits 250 and 253 leading to bores 251 and 254 are provided. A second piston 205' is received in a chamber 228, and a piston rod 229 is guided in a hollow piston rod 208 of working ram 205. The structure is provided for a hydraulic press for pressing together two sheets of a work piece to be riveted together. Piston rod 229 and working ram 205' operate on a riveting stem disposed on the end of the bore of piston rod 208. At least one bore 233 connects a chamber portion 232 of chamber 228 with chamber portion 203b so that the pressure medium may be shifted from the chamber portion 232 into the chamber portion 203b during the advancing stroke of working ram 205' and the return stroke of working ram 205' may enter chamber portion 232.

In contrast, to the teaching of Glas, claims 1 and 8 each recite, in part;

> **"a hydraulic transformer . . .;**
> **at least one hydraulic motor; and**
> **a bypass valve operatively coupling at least one said motor to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic associated with at least one said hydraulic motor."** (Emphasis added.)

A hydraulic transformer according to the recitations of claims 1 and 8 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of

pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in the pending claims are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

A bypass valve recited for the hydraulic system of claim 1, or for the work machine of claim 8, selectively couples the hydraulic motor "to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic" associated with the hydraulic motor.

Glas teaches a hydraulic press having a ram that may include one or more pistons therein. Glas does not teach or suggest a hydraulic system or work machine including a transformer adjustably controlling the pressure amplification of hydraulic fluid flowing therethrough, a hydraulic motor adjustable to provide an output shaft thereof with a desired rotational speed and/or torque, nor a bypass valve operably coupling the motor to selectively receive fluid flow from a hydraulic pressure source or the hydraulic transformer, as recited in claims 1 and 8. The present invention allows a hydraulic motor to operate within two different operating ranges, depending upon whether the pressure received at the motor inlet is a non-amplified pressure directed from an accumulator, or an amplified pressure from the hydraulic transformer. It is thus possible to utilize a smaller motor over a wider range of operating conditions by providing both non-amplified and amplified hydraulic pressure sources, and selectively coupling the motor to one or the other of the sources. Further, hydraulic motors of a different size, torque and efficiency can be provided, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the

different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high torque requirements, and a second motor can be provided, which operates at higher efficiency at higher speed and lower torque requirements.

It is respectfully submitted that claims 1 and 8 therefore recite an invention neither anticipated by, nor obvious from the teaching of Glas. Accordingly, claim 1 together with claims 2-7 dependent therefrom and claim 8 are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

In further contrast of the teaching of Glas, claims 9 and 13 each recite in part:

> **a hydraulic transformer . . .; and**
>
> **a plurality of hydraulic motors, each said hydraulic motor being fluidly coupled in a parallel manner with said pressure source, at least two of said hydraulic motors being configured with different operating ranges.** (Emphasis added.)

A hydraulic transformer according to the recitations of claims 9 and 13 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in the pending claims 9 and 13 are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

Glas teaches a hydraulic press having a ram that may include one or more pistons therein. Glas does not teach or suggest a hydraulic system or work machine including a transformer adjustably controlling the pressure amplification of hydraulic fluid flowing therethrough, a plurality of hydraulic motors fluidly coupled in parallel with a pressure source, or two such motors configured with different operating ranges, as recited in claims 9 and 13. The present invention allows hydraulic motors of different size, torque and efficiency to be used, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high torque requirements, and a second motor can be provided which operates at higher efficiency at higher speed and lower torque requirements. It is respectfully submitted that claims 9 and 13 therefore recite an invention neither anticipated by, nor obvious from the teaching of Glas. Accordingly, claim 9 together with claim 10 dependent therefrom, and claim 13 are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

Claims 1-3 and 8-13 have been rejected under 35 U.S.C.§ 102(b) as being anticipated by U.S. Patent 5,878,569 (Satzler). It is respectfully submitted that the invention recited in claims 1, 8, 9 and 13 is patentably different from the teachings of Satzler and includes advantages over the prior art.

Satzler teaches an energy conversion system for utilizing energy from a source of pressurized fluid, such as a free piston engine and a storage accumulator. A free piston engine 12 delivers a predetermined volume of pressurized fluid per stroke of the free piston engine. The

pressurized fluid is received and stored in an accumulator 20. When the pressure of accumulator 20 reaches a predetermined maximum pressure level free piston engine 12 is turned off. When the pressure in accumulator 20 falls below a predetermined level free piston engine 12 is started, to deliver pressurized fluid to accumulator 20. Pump motors are provided in power modifying units to provide different output flow and pressure characteristics for the fluid provided therefrom. The power modifying units operate to efficiently reduce the pressure level of the fluid provided from the accumulator. In using pressurized fluid from the energy conservation system, a control arrangement selects the path of pressurized fluid having the lowest pressure level needed to perform the required task. Thus, hydraulic energy is utilized efficiently.

In contrast, to the teaching of Satzler, claims 1 and 8 each recite, in part;

> **"a hydraulic transformer . . .;**
> **at least one hydraulic motor; and**
> **a bypass valve operatively coupling at least one said motor to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic associated with at least one said hydraulic motor."** (Emphasis added.)

A hydraulic transformer according to the recitations of claims 1 and 8 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in pending claims 1 and 8 are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

A bypass valve recited for the hydraulic system of claim 1, or for the work machine of claim 8, selectively couples the hydraulic motor "to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic" associated with the hydraulic motor.

Satzler teaches an energy conservation system that includes modifying units to reduce the pressure from a source, and switch means to select the modifying unit providing the minimal pressure level suitable for the task. Satzler does not teach or suggest a hydraulic system or work machine including a transformer adjustably controlling the pressure amplification of hydraulic fluid flowing therethrough, a hydraulic motor adjustable to provide an output shaft thereof with a desired rotational speed and/or torque, nor a bypass valve operably coupling the motor to selectively receive fluid flow from a hydraulic pressure source or the hydraulic transformer, as recited in claims 1 and 8. The present invention allows a hydraulic motor to operate within two different operating ranges, depending upon whether the pressure received at the motor inlet is a non-amplified pressure directed from an accumulator, or an amplified pressure from the hydraulic transformer. It is thus possible to utilize a smaller motor over a wider range of operating conditions by providing both non-amplified and amplified hydraulic pressure sources, and selectively coupling the motor to one or the other of the sources. Further, hydraulic motors of a different size, torque and efficiency can be provided, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high

torque requirements, and a second motor can be provided which operates at higher efficiency at higher speed and lower torque requirements.

It is respectfully submitted that claims 1 and 8 therefore recite an invention neither anticipated by, nor obvious from the teaching of Satzler. Accordingly, claim 1 together with claims 2 and 3 dependent therefrom, and claim 8 are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

In further contrast of the teaching of Satzler, claims 9 and 13 each recite in part:

> **a hydraulic transformer . . .; and**
> **a plurality of hydraulic motors, each said hydraulic motor being fluidly coupled in a parallel manner with said pressure source, at least two of said hydraulic motors being configured with different operating ranges.** (Emphasis added.)

A hydraulic transformer according to the recitations of claims 9 and 13 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in the pending claims are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

Satzler teaches an energy conservation system that includes modifying units to reduce the pressure from a source, and switch means to select the modifying unit providing the minimal pressure level suitable for the task. Satzler does not teach or suggest a hydraulic system or work machine including a transformer adjustably controlling the pressure amplification of hydraulic

fluid flowing therethrough, a plurality of hydraulic motors fluidly coupled in parallel with a pressure source, or two such motors configured with different operating ranges, as recited in claims 9 and 13. The present invention allows hydraulic motors of different size, torque and efficiency to be used, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high torque requirements, and a second motor can be provided which operates at higher efficiency at higher speed and lower torque requirements. It is respectfully submitted that claims 9 and 13 therefore recite an invention neither anticipated by, nor obvious from the teaching of Satzler. Accordingly, claim 9 together with claims 10-12 dependent therefrom, and claim 13 are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

Claims 1-10 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 2,867,088 (Kux). It is respectfully submitted that independent claims 1, 8 and 9 recite an invention patentable over the teaching of Kux, which includes advantages over the prior art.

Kux teaches a hydraulic pressure multiplier or booster. A cylinder structure 15 includes a relatively long section 16 of relatively smaller diameter and a relatively short section 17 of relatively larger diameter. One end portion of section 16 is reduced in diameter and is received in section 17. The end of section 16 is provided with an annular recess which receives a suitable sealing ring 18 to afford a fluid tight engagement between the sections. A center tube 27 is located axially within communicating bores of sections 16 and 17. An intensifier piston 38 is supported on tube 27 and has an enlarged portion 39 which fits in the bore of section 17 and a

reduced portion 41 which fits in the bore of section 16. Fluid is pumped through a conduit 81, a port 34 and through center tube 27 outwardly through apertures 37 into the bore of section 16 to act on a piston 54 and effect downward movement thereof.

In contrast to the teachings of Kux, independent claims 1 and 8 recite in part:

> **"a hydraulic transformer . . .;**
> **at least one hydraulic motor; and**
> **a bypass valve operatively coupling at least one said motor to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic associated with at least one said hydraulic motor."** (Emphasis added.)

A hydraulic transformer according to the recitations of claims 1 and 8 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in pending claims 1 and 8 are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

A bypass valve recited for the hydraulic system of claim 1, or for the work machine of claim 8, selectively couples the hydraulic motor "to selectively receive fluid flow from either said pressure source or said hydraulic transformer outlet, dependent upon an operating characteristic" associated with the hydraulic motor.

Kux teaches a pressure multiplier. Kux does not teach or suggest a hydraulic system or work machine including a transformer adjustably controlling the pressure amplification of

hydraulic fluid flowing therethrough, a hydraulic motor adjustable to provide an output shaft thereof with a desired rotational speed and/or torque, and a bypass valve operably coupling the motor to selectively receive fluid flow from a hydraulic pressure source or the hydraulic transformer, as recited in claims 1 and 8. The present invention allows a hydraulic motor to operate within two different operating ranges, depending upon whether the pressure received at the motor inlet is a non-amplified pressure directed from an accumulator, or an amplified pressure from the hydraulic transformer. It is thus possible to utilize a smaller motor over a wider range of operating conditions by providing both non-amplified and amplified hydraulic pressure sources, and selectively coupling the motor to one or the other of the sources. Further, hydraulic motors of a different size, torque and efficiency can be provided, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high torque requirements, and a second motor can be provided which operates at higher efficiency at higher speed and lower torque requirements.

It is respectfully submitted that claims 1 and 8 therefore recite an invention neither anticipated by, nor obvious from the teaching of Kux. Accordingly, claim 1 together with claims 2 -7 dependent therefrom, and claim 8 are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

In further contrast of the teaching of Kux, claims 9 recites in part:

> **a hydraulic transformer . . .; and**
>
> **a plurality of hydraulic motors, each said hydraulic motor being fluidly coupled in a parallel manner with said**

pressure source, at least two of said hydraulic motors being configured with different operating ranges. (Emphasis added.)

A hydraulic transformer according to the recitations of claim 9 is described in paragraph [13] of the present application. The transformer is adjustable to control the amount of pressure amplification flowing therethrough. The transformer may include a port plate or port barrel to control pressure amplification of the hydraulic fluid flowing therethrough.

Hydraulic motors as recited in pending claim 9 are described in paragraph [14] of the present application. As described therein, a hydraulic motor includes an output shaft 44 coupled to a hydraulic load 24, and the hydraulic motor is selectively adjustable to provide the output shaft with a desired rotational speed and/or torque depending upon operating conditions.

Kux teaches a pressure multiplier. Kux does not teach or suggest a hydraulic system including a transformer adjustably controlling the pressure amplification of hydraulic fluid flowing therethrough, a plurality of hydraulic motors fluidly coupled in parallel with a pressure source, and two such motors configured with different operating ranges, as recited in claim 9. The present invention allows hydraulic motors of different size, torque and efficiency to be used, with one or the other of the motors operatively connected to the load so that the most efficiently operating motor for the conditions present can be used. Each of the different size hydraulic motors is operated only within its most efficient range, and when one or the other motor begins to operate outside of an efficient range, the hydraulic system switches to provide power from the other, more efficiently operating motor. Thus, one motor can be provided which operates at higher efficiency at low speed and high torque requirements, and a second motor can be provided which operates at higher efficiency at higher speed and lower torque requirements. It is respectfully submitted that claim 9 therefore recites an invention neither anticipated by, nor obvious from the teaching of Kux. Accordingly, claim 9 together with claim 10 dependent

therefrom are in condition for allowance. Reconsideration and an indication of allowance are respectfully requested.

For the foregoing reasons, Applicants submit that the pending claims are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Moreover, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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